

**PARALLEL SESSION A : BENEFITS OF DOWNSCALING
A2: MODELS OF THE COUPLED REGIONAL CLIMATE SYSTEM**

Regional coupled ocean-atmosphere simulation of the Indian Monsoon

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This study highlights the importance of the high resolution air-sea coupling for the simulation of the Indian Monsoon. These simulations were carried out using a fully coupled regional ocean-atmosphere modeling system, which contains the RSM (Regional Spectral Model) as the atmospheric part and ROMS (Regional Ocean Modeling System) as the ocean counterpart. The RSM has 28 terrain following sigma levels that is identical to the NCEP-DOE reanalysis, while ROMS has 30 vertical ocean sigma levels. High-resolution ETOPO5 bathymetry is used in ROMS for the coupled simulation. The RSM and ROMS share the same domain and resolution to avoid interpolation between ocean and atmosphere model grids. SST and fluxes are exchanged between atmosphere and ocean model without using any SST-flux coupler. The Coupled downscaling is a free run without any heat or salinity corrections. The two analyzed regional simulations use for one atmospheric and ocean reanalysis (NCEP-DOE atmospheric reanalysis and Simple Ocean data assimilation) and the other CCSM4 20th century simulation as lateral boundary conditions. In addition we also downscale the CCSM4 with just the RSM using the CCSM4 boundary conditions and SST. In comparing and analyzing these model integrations we will highlight the ocean rectification effect on the monsoon simulation from downscaling, which is otherwise missed in atmospheric downscaling.